

PREScribed FIRE PLAN

Corky Conover

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B. EXECUTIVE SUMMARY

Whitman Mission National Historic Site (NHS) is located 7 miles west of Walla Walla, and covers 98.15 acres; however, not more than 85 acres are burnable, with the rest covered in Class A irrigated turf or pavement and buildings.

The *Whitman Mission National Historic Site Fire Management Plan* was updated in January, 2004. Current fire management activities include fire suppression and the proposed application of prescribed fire. Management of natural ignitions for resource benefit is not feasible on the NHS because of the small size of the site and the number of sensitive resources. It would be difficult to contain a natural fire within the boundaries of the NHS.

All unplanned ignitions, both lightning-caused and human-caused, are suppressed in the site to protect sensitive park resources, as well as to prevent damage to neighboring private lands. The park has the responsibility for fire suppression but carries it out through agreements with the local county fire district and the U.S. Forest Service.

The prescribed burns will be conducted at the NHS on an annual basis at different areas of the park to maintain, to the extent possible, the role of fire in the ecosystem and to reduce the build-up of hazardous fuels. The result of the burns will promote the health and vigor of the grasses and reduce the spread of noxious weeds. The burns are conducted in the late winter or early spring. This timing allows the fire to consume previous years' dead, dried grass stems and leaves, but not damage the grass plants' roots.

The Chief of Interpretation and Resource Management and other qualified staff coordinate with the Umatilla National Forest and local fire departments to plan and implement all prescribed burns. Prescribed burning activities will last only a few days a year, and usually will last only one afternoon per year. Between 10 and 20 acres would be burned each year, and most areas of the park would be burned every 3 to 5 years. The park only burns on county "Burn Days" to facilitate smoke dispersal. There are no future management changes anticipated. However, if more land area within the park is planted with native grasses, fire will probably play a part in its maintenance.

Direction to utilize prescribed fire to achieve goals and objectives further stated in this burn plan come from the Whitman Mission National Historic Site Fire Management Plan. The 2001 Review and Update of the 1995 Federal Wildland Policy mandates federal land management agencies to conduct all prescribed fire projects consistent with land and resource management plans, public health considerations, and approved prescribed fire plans. The policy of using fire as a tool will help decrease risks to life, property and resources as well as help perpetuate the natural and cultural resource values for which this National Historic Site was established.

C. DESCRIPTION OF PRESCRIBED FIRE AREA

1) Area Description:

Most of the 98.15 acres of Whitman Mission National Historic Site is flat bottomland covered with grasses and scattered trees. One hill rises approximately 100 feet above the plain to an elevation of 720 feet above sea level. The grounds of the historic site are managed as one historic zone. The entire area of the site is listed on the National Register of Historic Places. The park is a mosaic of lawn, grassland, reed creek bottoms, and dry sagebrush slopes, separated and tied together with service roads, trails, and an irrigation ditch. Much of the original sagebrush and bunch grass surrounding the park is now cultivated.

2) Location: Township 7N, Range 35E, Willamette Meridian, section 32
 Latitude 46° 2' 29" N
 Longitude 118° 27' 33" W

3) Size: 98 acres

Elevation Range: 620 – 720'

Slopes: 0-100%, average 5%

Aspects: flat, except north, west , and south aspects of hill

4) Description of Project Boundaries:

Outside the north boundary fence is Union Pacific Railroad land. Park staff mows the fence line inside the park, which is part of Area D1. Problem species such as poison hemlock, cheatgrass, and teasel grow on both the park side and the railroad side of the fence. Park staff does not mow along the boundary fence in the extreme northwest corner of the park, northwest of Mill Creek. Poison hemlock is the dominant species in D4 up to the boundary fence. Outside the fence, on railroad land, the park neighbor mows between his property line fence and the tracks in an effort to keep weeds such as thistles, quack grass, and field bindweed controlled. He mows the railroad land adjacent to D4b at the same time.

Land adjacent to the west boundary is used for pasture or for commercial wheat production, and is on a lifetime lease to the former owner. When the current leasee (former owner) and his spouse are deceased, which may be 20 years from now, the land will belong to Whitman Mission National Historic Site. The park staff does not mow along the fence line in Areas D or F, but does mow along the fence in Area B along the west boundary. Poison hemlock, cheatgrass, and Canada thistle are the predominant weeds along the park's west side, and they put some pressure on the adjacent private land for weed control. The pasture areas west of Area B and west of Area D are so closely cropped that there is little chance for thistle or poison hemlock to grow. The park neighbor replants the wheat field west of the southwest portion of Area D3 every year.

The Washington State Fish and Game Department administers the land along the Walla Walla River adjacent to the park's south boundary as a wildlife habitat. Since 1989, the park staff mows an 8-foot strip along the entire south boundary fence within the park. Weed control is difficult, especially for poison hemlock, which grows on both sides of the south boundary fence. A variety of weed seeds probably enters and leaves the park through the south boundary.

The east boundary of the park is more complex because it includes the Memorial Shaft Hill as well as agricultural land. All the adjacent land is privately owned and produces wheat or onions except where the hill slope is too steep or where the land is too wet near Doan Creek. Non-native plants that spread from the park include Canada thistle, yellow starthistle, cereal rye grass, and cheatgrass. Weeds enter the park along the steep slopes of the Memorial Shaft Hill. The most common ones are cheatgrass and yellow starthistle. Aquatic weeds come into the park along Doan Creek.

Sub-unit descriptions

B. Area B, approximately 28 acres at the southern end of the park, has a well-established grass stand and has approximately 20% of it covered in poison hemlock or Canada thistle. Approximately 10 acres were planted in November, 1987 and the rest in March 1988, with native and non-native grasses. The area south of Area B, south of the park, is heavily infested with noxious weeds. Irrigated pasture or cultivated farmland borders Area B to the east and west. Now that a new stand of grass is well established, this area will benefit from a prescribed fire every few years.

C. Area C is approximately 15 acres and has been subdivided into three sub-units coinciding with the northern, western, and southern aspects of the 100-foot high hill. Use of prescribed fire during revegetation efforts will reduce the cheatgrass and yellow starthistle populations. A hot backfire burning downslope is necessary to kill as many seeds and plants as possible. The burn can be timed so the sagebrush, rabbitbrush, and buckwheat are not killed by fire, even if most of their aboveground growth is consumed. When burning is complete, the site should be almost entirely devoid of vegetation. Parts of Area C are undergoing revegetation at this time. The combined use of herbicides, prescribed fire and mechanical treatment may be necessary to prepare the seedbed for revegetation in future years. The south line of Area C is the paved county road and the Oregon Trail.

D. Area D occupies approximately 31 acres in the northern and western part of the park. It supported very few native species until revegetation efforts began. Native and non-native grasses were planted in November, 1987 on approximately 10 acres. Another 15 acres were seeded in the fall of 1988. Approximately 5 acres in the northeastern corner of Area D support reed canary grass. Now that the new stands of grass are well established, this area will benefit from periodic prescribed fire.

E. Area E lies between the park residence and the Visitor Center. Bordered on the south by the paved walk to the Great Grave, this area was seeded with Great Basin wildrye and Sherman big bluegrass. It should benefit from periodic prescribed fire. Area E is approximately 2 acres. The Sherman big bluegrass did not compete against exotic weeds as well as the Great Basin wildrye did, and very little of the Sherman variety has survived.

F. Area F1, approximately 8 acres, lies between the Visitor Center, Memorial Shaft Hill, and the Oregon Trail. Vegetation is primarily wheatgrass, bunchgrasses, quackgrass, and cheatgrass. Most of the area's grasses are dense enough to suppress annual weeds. Small patches of teasel, poison hemlock, and thistles grow within it. Periodic burning or fertilization will maintain or increase the vigor of the perennial grasses.

G. Area F2, the Mission site itself, is covered almost entirely with an irrigated Class A turf. It will not be subjected to prescribed fire except along the strip between Whitman's irrigation ditch and the Oregon Trail.

5) Vegetation Types and NFDRS Fuel Model including Fuel Loading and Dead Fuels:

B. Area B contains big bluegrass, wheat grasses, canary grass and other native and non-native grasses. Some grasses are growing six feet tall. It is NFDRS Fuel model L, BEHAVE+ fuel model 3, and approximately 28 acres. Control lines will be the park's south boundary, east boundary, north boundary of area B, and the general course of the old river oxbow as the northwestern limit of the burn, with the park's west boundary as the western limit of the burn.

The west, south, and east boundaries have an eight foot wide strip of vegetation mowed along the inside of the boundary fence. Outbuildings along the west boundary adjacent to the park's boundary fence are the nearest neighbor's buildings. The mowed strip will need to be wetted inside the park near those buildings. South of Area B is fuel model 8, east of Area B is an agricultural field, usually planted in alfalfa, winter wheat, or onions. Along the north boundary of Area B is the mowed Oregon Trail, the irrigation ditch and Millpond, and the Old River Oxbow. The Oregon Trail cannot carry fire across it, while the irrigation ditch and Millpond are water barriers. West of the Millpond, along the northwest boundary of Area B (Old River Oxbow) is fuel model 8 where holding forces would have to wet the area boundary and then fire off of the wet line, backing the fire into the wind.

C. Area C is an unirrigated mixture of small shrubs, weeds and grasses including rabbitbrush, buckwheat, and bluebunch wheatgrass. Approximately 15 acres, it is NFDRS Fuel Model L, BEHAVE+ fuel model 3. Area C control lines will be the park boundary and plowed fields on the east. Hand line and wet line along the steeper slopes of part of the eastern boundary will consist of suppressing the fire with flappers, foam, and backpack hand water sprayers. Ignition along this side must be slow enough that holding personnel can keep pace with firing personnel.

The west control lines will be the pedestrian trail at the base of the hill beside the Doan Creek irrigation ditch. The south boundary is the mowed Oregon Trail. The north boundary is the Doan Creek Irrigation ditch, then the steeper part of the north aspect that is fuel model 8. Next to the trees of fuel model 8, firing should take off from a wet line put in along the Area boundary. Near the base of the north aspect of Area C, next to the irrigation ditch, a swath of tall grasses will have to be mowed and wetted to form a wet line approximately 25 feet long by 12 feet wide.

D. Approximately 5 acres in the northeastern corner of the area are lower and moister, supporting a dense stand of reed canary grass. Most of the area has established grass stands of

wheatgrasses and blue grasses at this time. Approximately 31 acres, it is NFDRS Fuel Model L, BEHAVE+ fuel model 3. Area D control lines will be the park boundary and railroad tracks on the north, the park boundary and cultivated field on the east, a combination of the irrigation ditch, service road, and the utility area on the south, and the park boundary and cultivated field on the west.

The east and north boundaries of Area D have a mowed strip inside the boundary fence that will slow fire enough so firing can be done from the mowed strip and back into the wind. Holding crewmembers can wet the short vegetation in the mowed strip or use flappers to hold the fire next to the firing personnel. The west boundary is fuel model 8 next to Mill Creek. Fire should be stopped before it enters the fuel model 8 area to ensure that all fire is out by 6:00 p.m. A strip in front of the trees will be mowed and holding personnel with flappers or hand sprayers can stop the fire as it enters the mowed strip. The rest of the west boundary is the park fence line and a mowed strip along the inside of the fence will be mowed before Area D is burned. Outside the boundary fence is a closely cropped pasture and an agricultural field that usually is planted in winter wheat. The south boundary of Area D is the irrigation ditch, the mowed strip around the maintenance facility, and the park service road. Around the maintenance facility the mowed vegetation strip may need to be wet with water from an engine or the nearby fire hydrant.

E. Predominately Great Basin wildrye, with Canada thistle scattered within it, Area E is 5 acres and NFDRS Fuel Model L, BEHAVE+ fuel model 3. Area control lines will be the paved walk leading to the Great Grave on the south, the irrigated lawn on the west, and either wet line or hand line along the north and east. The north and east lines can be reached with hose from a fire hydrant. West of the park residence the Area boundary is the edge of a grove of trees that are fuel model 8. An engine may have to create a wet line for approximately 50 feet to prevent any fire from entering the heavier fuels.

F. NFDRS Fuel Model L, BEHAVE+ fuel model 3, Area F1 contains native and non-native grasses and scattered thistle and teasel. Control lines will be the Oregon Trail on the south, and hand line construction using flappers along the west side at the edge of the irrigated, mowed lawn. The paved walk from the Visitor Center to the Great Grave is the northern control line. A mowed strip of vegetation around a grove of trees in the northeast corner of Area F1 will keep fire out of the BEHAVE+ fuel model 8 area. Given the prevailing winds, firing personnel will probably begin strip fires off the northeast corner of F1. The irrigation ditch along the base of Memorial Shaft Hill is the eastern control line. The Oregon Trail is the southern control line, and the west and northwest control lines are the edge of the mowed and irrigated lawn.

G. In Area F2, the 30 foot wide strip between the Oregon Trail and Whitman's irrigation ditch contains Great Basin wildrye grass and scattered poison hemlock and teasel. It is NFDRS Fuel Model L, BEHAVE+ fuel model 3. The irrigation ditch is the southern control line, while the Oregon Trail is the northern one. Fire will be held at the split rail fence that runs beside the Oregon Trail using a combination of foam, backpack hand sprayers, and flappers. The east and west ends of Area G is the irrigation ditch.

| Vegetation Type | Fuel Model BEHAVE+ & NFDRS | % of Unit | # acres | Estimated Tons per acre |
|---|----------------------------------|--------------|---------|-------------------------------|
| Perennial native and non-native grasses with widely scattered shrubs. Dead grass stems from previous few years growth lie between live grasses. | 3 L | 100% | 85 | 3.0 |

Note: Estimated tons-per-acre for fuel model came from Gaining a Basic Understanding of NFDRS, sponsored by National Wildfire Coordinating Group, January, 2002. Website: www.fs.fed.us/arnf/fire/nfdrs_course.pdf

VICINITY MAP (Appendix 1)

PROJECT MAP (Appendix 2)

D. GOALS AND OBJECTIVES

GOALS

Hazard Fuel Reduction- A low to moderate intensity burn will reduce dead, brown vegetation and reduce non-native vegetation by allowing restoration of native vegetation. As the vegetation regrows, the park staff may treat areas of non-native vegetation according to the park's Integrated Pest Management Plan.

Restore Natural Processes- Prescribed fire will reintroduce fire back into a fire-dependent ecosystem. This is part of a plan that continues to use prescribed fire as it historically occurred at Whitman Mission.

SPECIFIC OBJECTIVES

| Specific Objectives | Actual Results |
|--|----------------|
| Reduce dead grass vegetation by 80% over 60-80% of the area. | |
| Retain 75% of the shrub cover in the burn unit. | |
| Retain 95% of standing trees within the burn unit. | |

Range of Acceptable Results Expected Across the Project Area

It is expected that 80-90% of the burned area will be blackened by fire. The burned area will exhibit a variety of fire effects. The effects will range from small patches of total mortality of bunch grasses to low severity surface fires that consume only a thin layer of the dead grass stems.

E. PROJECT COMPLEXITY

The entire burn project is located within the boundary of Whitman Mission National Historic Site. All parts of the project (Area B, C, D, etc.) have vehicular access except the steep slopes of the hill. Vehicles can access the base of the slopes as well as the flat top of the hill, so wet lines can be put in along the east boundary of the park, up and/or down the hill side on the south and north aspects. Because of the small size of the project, all ignitions will be by hand. Although this may be somewhat slow on the slopes and next to the park's boundaries, no major obstacles should be encountered in the execution of the project. Safety of all personnel involved in a prescribed fire operation is the most important concern at the park. The tall grass fuel at Whitman Mission is the most volatile of any of the fuel models, with a large surface to volume ratio that makes it highly affected by wind speed and changes in fuel moisture. High rates of spread and flame lengths could be quickly achieved in areas of dense fuel. The prescribed fire organization, the fire prescription, scheduling, and ignition and holding actions must take into account the tall grass fuel.

Protection from slop overs and spot fires is a significant concern that the park must mitigate in the burn plan. The Burn Boss must make that concern one of the highest priorities during the burn. If a prescribed fire goes out of prescription either through a spot fire in another area of the park, or weather conditions change, it may be prudent to pull all personnel back to the fire area boundary, rather than face high flame lengths and rates of spread within any one burn unit. A fire within the park that is out of prescription will be much easier to contain at a burn unit boundary that uses natural fuel breaks or man-made ones inside the park.

The worse case scenario is to have a National Park Service fire escape the park. The Adequate Holding Forces Worksheet, Appendix 9, page 38, takes into account a spot fire out of the park. Most of the area around the park is either agricultural land in wheat or onions, or pasture and is not burnable during our prescription season. The rest of it is fuel model 8, and the worksheet shows that adequate holding forces are present at the park during a prescription burn to contain any spot fire in that fuel model. Park management will be in a much better position to work cooperatively with park neighbors on weed control and hazardous fuels once the park has completed successful burns for a few years with the help of the local USFS ranger district fire personnel.

F. ORGANIZATION

The organization described in Section F is the minimum resources required to implement the project. The Burn Boss may order additional resources to better ensure attainment of objectives. All non-park resources will be ordered and committed to the prescribed fire project under the Supplemental Project Plan between Whitman Mission National Historic Site and the Walla Walla District, Umatilla National Forest. The Adequate Holding Resource Worksheet as completed in this document, and the Fireline Handbook (National Wildfire Coordinating Group Handbook 3, PMS 310-1) were used to determine

the minimum number and type of holding resources needed. Following ignition, during patrol and mopup phases, fewer resources may be required. The Burn Boss has the discretion to adjust the resources to accomplish the objectives. All prescribed burns within Whitman Mission National Historic Site must be extinguished by 6:00 p.m. per the requirements of a County Burn Permit.

Burn Boss (Type 2)
 Holding Specialist
 Ignition Specialist
 2 Ignition crewmembers
 4 Holding crewmembers

The qualifications of each individual holding these positions will be on file at their home unit. The Burn Boss will be provided with a list of personnel qualifications. One person may not fill multiple positions (e.g. Burn Boss and Ignition Specialist) except the ignition and holding crewmembers. As the burning operation progresses, crewmembers may switch from one task to the other when appropriate, depending upon the progress of ignition. All persons filling these positions must be NWCG qualified.

G. ESTIMATED PROJECT COSTS (non-base, other agency, contract)

| Item: | Project Phase: | Planning | Preparation | Execution | Evaluation |
|---|----------------|-----------|-------------|-----------|------------|
| Personnel: | NPS | \$ 0.00 | \$ 0.00 | \$0.00 | \$ 0.00 |
| | USFS – In-kind | \$ 0.00 | \$ 0.00 | \$ 0.00 | \$ 0.00 |
| Equipment: | Tools / Fuel | \$ 0.00 | \$ 0.00 | \$ 0.00 | \$ 0.00 |
| Mileage | | \$ 0.00 | \$ 0.00 | \$ 0.00 | \$ 0.00 |
| TOTAL PROJECTED COSTS (non-base, other agency, contract) | | \$ 0.00 | \$ 0.00 | \$ 0.00 | \$ 0.00 |
| | | | | | |
| Base funds projected costs | | | | | |
| Personnel: | NPS | \$250.00 | \$ 250.00 | \$ 450.00 | \$ 500.00 |
| | USFS | \$ 500.00 | \$ 500.00 | \$1000.00 | \$ 100.00 |
| Equipment: | Tools/Fuel | \$ 0.00 | \$ 50.00 | \$ 100.00 | \$ 100.00 |
| Mileage | | \$ 0.00 | \$ 0.00 | \$ 50.00 | \$ 0.00 |
| TOTAL PROJECTED COSTS (Base funds) | | \$750.00 | \$ 800.00 | \$1600.00 | \$ 700.00 |

ESTIMATED TOTAL COST FOR PROJECT: \$ 3850.00

ESTIMATED TOTAL COST PER ACRE: (\$3850.00/85 acres) \$ 45.29

H. SCHEDULING

Proposed ignition date: Early January – late-March

Projected burn duration: Burn duration will not exceed one day, as required by the County Burn permit. More than one sub-unit may be burned at a time, and burning may occur on more than one day to accomplish management's resource objectives.

Dates when the burn will not be conducted:

1. No-burn day as determined by the Walla Walla County Burn Control office.
2. Local, Regional, or National preparedness levels preclude new prescribed fires.
3. Management concerns preclude ignition of any portion of this project.
4. Holidays or times of high visitor use.

I. PRE-BURN CONSIDERATIONS

PREPARATION NEEDS ON SITE

ONE WEEK (or more) BEFORE BURN:

1. The Burn Boss, Ignition Specialist and/or Holding Boss will scout the unit with park resource manager to review and verify locations of project boundaries, areas of concern, firing cut-off points, water sources, etc. Maps will be reviewed and revised if necessary. This information will be provided to all participating personnel before ignition. Take pre-burn photos of unit and record photo point locations.
2. Project boundaries, escape routes and safety zones will be identified and flagged as needed.
3. On site weather will be taken before ignition. A belt weather kit in conjunction with the Whitman Mission weather station will be used. The Burn Boss will obtain and analyze long-term weather forecasts (10 day or greater) before ignition.
4. Fire effects monitoring plots will be installed (or re-read) in accordance with the NPS Fire Monitoring Handbook and as determined by the park's resource manager.
5. Burn Boss will meet with park Superintendent, review and sign Superintendent GO/NO-GO Pre-Ignition Approval. (See Appendix 10)

ONE DAY (or more) BEFORE BURN:

1. The Superintendent will be briefed at least 24 hours before ignition. Review and obtain signatures for Prescribed Fire Operations GO/NO-GO Checklist. (See Appendix 11)

MORNING OF BURN:

1. Ensure protection of visitors and/or employees that may be within the area.
2. Post "Prescribed Fire in Progress" and "Smoke in Area" signs in the Visitor Center. These signs will be posted before ignition and will remain posted for the rest of the day.
3. The park resource manager or a member of the park's interpretive staff will facilitate the dissemination of information to the public where prescribed fire activity is visible to the public.

OFF-SITE PREPARATION NEEDS

ONE WEEK BEFORE BURN:

1. Complete necessary pre-work as listed on the Prescribed Fire Checklist.
2. Send letter through Superintendent notifying adjacent landowners of prescribed fire. A general prescribed fire press release at least one to two weeks before the proposed ignition date will notify Walla Walla area residents.

DAY OF BURN:

4. Notify County Dispatch, Fire District 4, and County Burn office of prescribed fire project. See Appendix 14, page 45, Notification Checklist.
5. The park resource manager or a member of the park's interpretive staff will facilitate the dissemination of information to the public where prescribed fire activity is visible to the public.

SPECIAL PRECAUTIONS/REGULATIONS:

1. Cultural resource clearance has been obtained from the appropriate subject matter experts.
2. All burn personnel will wear the full complement of personal protective equipment (PPE) as stated within the Fireline Handbook (PMS 310-1).
3. All standard wildland fire fighter safety rules will be strictly adhered to. All guidelines within the Departmental Manual and NPS Reference Manual – 18 will be strictly followed.
4. All personnel will be briefed about the project area and cautioned to avoid serious injury when moving about. The Burn Boss will be responsible for ensuring that full briefings occur for all burn personnel before each operational period. NO ONE will be allowed to be in the project area without a briefing.

J. PRESCRIBED FIRE PRESCRIPTION

NFDRS (FBPS BEHAVE+) Fuel Models used: L (3) 100% of burn unit.

PRESCRIPTION

| Weather | Range |
|-------------------------------------|---------|
| Temperature (degrees F) | 45 - 65 |
| Relative Humidity (%) | 40 - 68 |
| Wind Direction (Cardinal direction) | S,W,N |
| Midflame Wind Speed (mph) | 2 - 6 |
| 1-Hour Fuel Moisture (%) | 8 - 20 |

| Fire Characteristics | Range |
|---------------------------------|------------|
| Rate of Spread (chains / hour) | 16 - 129 |
| Flame length (feet) | 4 - 14 |
| Fireline Intensity (btu/ft/sec) | 142 - 1625 |
| Probability of Ignition (%) | 40 maximum |

K. IGNITION AND HOLDING ACTIONS

Test Fire:

A test ignition on the burn site will be conducted to observe flame lengths and rates of spread immediately before planned ignition. It shall be ignited in the prescribed fire area that is representative of the fuels, topography, and weather for the area. It should also be in an area where it can be easily controlled if it appears that objectives would not be met. If results are acceptable, unit ignition will proceed according to the plan. If results of the test fire are unacceptable, the test fire will be terminated and the prescribed fire postponed and/or rescheduled.

The Burn Boss, Ignition and Holding Specialist will determine the location of the test fire on the day of project implementation and ensure on-site resources are deployed to hold this operation.

Firing and Ignition:

Blacklining operations near the unit boundaries will be completed with drip torches and/or fuses. Driptorch fuels will be mixed by trained personnel, with a mixture of 3 parts diesel to 1 part gasoline (3:1). Combinations of strip head, flanking, spot, and backing ignition patterns will be used to ignite the unit. Firing patterns and directions could change depending on wind direction and other parameters. Firing off the previously burned area, wet line or area of sparse fuels will commence on the down wind side of the project area. Objectives will be to create a safe and secure black line along every area or sub-unit boundary while slowly adding fire to the interior portions of the unit. If prescription parameters are exceeded during project execution, the Burn Boss should terminate ignition operations at a safe and appropriate location based on fire behavior, fuels, topography, and weather conditions.

HOLDING ACTIONS

Roads, visitor trails, and mowed strips along fences surrounding the burn sub-units and in between different burn units or different fuel models will be used as burn sub-unit boundaries for holding operations. Holding actions include all standard fire suppression actions approved within the current Fire Management Plan. In general, the emphasis on managing holding actions will be the use of minimum impact suppression techniques as long as firefighter safety is not compromised.

a) Critical holding areas: Critical holding areas are along those portions of sub-units Area B, Area C, and Area D that are along the park boundary. The majority of holding resources will be concentrated along these sub-unit boundaries to minimize the potential for slopovers or spot fires. Land immediately adjacent to the park boundary in these sub-units is used for agriculture by private landowners.

b) See project map for Area designations, water sources, staging areas, access points, etc.

MOP-UP OPERATIONS

Mop-up of the entire unit burned that day will occur by park and USFS personnel assigned by the Burn Boss. A requirement of the Burn permit is that all fires be out by 6:00 p.m.

L. WILDLAND FIRE TRANSITION PLAN

If spot fires or slopovers occur, the Holding Boss will supervise suppression actions. Ignition within the target area will cease. If spot fires and/or slopovers cannot be controlled immediately with on-site resources, the Burn Boss will convert the emerging fire to wildland fire status. In general, the emphasis on managing suppression actions will be the use of minimum impact suppression techniques as long as firefighter safety is not compromised. Suppression forces would include the use of firefighters with handtools as well as firefighters staffing portable pumps and hoses. Walla Walla County dispatch will be notified and requested to send suppression resources from Walla Walla County Fire District 4.

In event of a wildland fire, the Burn Boss will make the declaration and assume the role of Incident Commander until relieved by an Incident Commander Type 3 (ICT3). All incident leaders (Holding, Ignition) will ensure the safety of ALL personnel assigned to them. All personnel will be assigned holding or suppression duties.

M. PROTECTION OF SENSITIVE FEATURES

Compliance with Section 106 of the National Historic Preservation Act (NHPA, as amended), was accomplished years earlier and will be reviewed by subject matter experts. The burn will have no adverse effect on the park. Cultural resources requiring protection from fire and related management activities are identified on a project map located in the compliance and project files, and are also identified on the attached project map. No ground disturbance is expected through the course of implementing this project. Hand ignition of the interior and utilization of natural and existing human constructed fuel breaks will prevent ground disturbance.

The only park building that is not surrounded by green lawn is the pumphouse located in back of the Pioneer Cemetery. Before any burn is conducted in Areas E or D, a wide strip must be mowed around the pumphouse, and may have to be wetted. The park does not have plans to burn adjacent to the pumphouse. The tall grasses there will be mowed, and raked if necessary to maintain a healthy grass stand.

Natural resource compliance is completed before the ignition of any project. Qualified staff has conducted appropriate review and survey of the project area for plant and animal species of concern prior to ignitions in the project area. An Environmental Assessment has been prepared and the Deputy Regional Director has approved a Finding Of No Significant Impact. The park resource manager is responsible for ensuring that all compliance measures are completed before ignition.

N. PUBLIC AND PERSONNEL SAFETY

All standard wildland fire safety rules will be strictly enforced. Project personnel will wear appropriate personal protective equipment (PPE) during all phases of the project. No person will be allowed into the project area during preparation or execution without the proper PPE and a safety briefing. See Job Hazard Analysis (JHA) in Appendix 13. A safety briefing will be given at the pre-burn briefing.

The Burn Boss and the prescribed fire management team will analyze safety concerns such as smoke on roads, potential health impacts to visitors from smoke, and other issues. All of the safety issues defined are standard for prescribed fire operations and can be mitigated through adjustments on site. The Burn Boss will work with the appropriate individuals (Rangers and Park Safety Officer) to institute any corrective safety measures associated with this project such as traffic control along the entrance road or other visitor use facility, trail, etc. If a serious safety issue cannot be resolved prior to ignition of any portion of this project, ignition will not take place.

WEATHER INFORMATION

Favorable weather conditions for the project will be determined from both General and Spot Forecasts obtained from the National Weather Service Office in Pendleton, Oregon (541-276-7832).

O. SMOKE MANAGEMENT AND AIR QUALITY

Smoke emissions are to be managed in accordance with the Washington State Department of Ecology and the Walla Walla County Burn Permit obtained from the Walla Walla County Conservation District -- (509) 522-6340. The Prescribed Fire Plan will comply with the Clean Air Act, Washington State Smoke Management Plan, and the Washington Visibility Protection Plan.

National Weather Service predictions on mixing heights for smoke dispersion are included into the county Burn Day and the park Go/No Go decision process. Receiving the permission of the burn control office in Walla Walla includes the assumption that air instability is adequate to facilitate smoke dispersal. Whitman Mission complies fully with their decisions. To the degree possible, the burn will be ignited at the time of maximum heating, to facilitate smoke dispersion. Every attempt will be made to burn during periods when winds are favorable for associated smoke dispersion.

EXPECTED SMOKE IMPACTS

The smoke column should disperse to the northeast with prevailing winds. Some minor smoke impacts may be expected for periods of up to six hours. By selecting time periods when weather conditions facilitate large-scale smoke dispersion, impacts to critical receptor sites are expected to be minimal. A

potential for health impacts to park visitors and staff does exist to a limited degree. If smoke rises well and dispersion is to the east and northeast (as planned), smoke will be carried away from many visitor use areas. Signs will be posted in the Visitor Center warning visitors of prescribed fire activities and possible smoke impacts. Every attempt will be made to burn during periods when winds are favorable for associated smoke dispersion.

P. INTERAGENCY COORDINATION AND PUBLIC NOTIFICATION

A general prescribed fire press release at least one to two weeks before the proposed ignition date will notify Walla Walla area residents. Notification of the public and adjacent agencies will take place as listed within the Off-site Preparations list contained within this plan. The Chief, Interpretation & Resource Management and burn boss will be responsible for notifications of all persons, businesses, or agencies listed in the notification list before ignition of the project. See Appendix 14.

Q. MONITORING AND EVALUATION PROCEDURES

Prescription parameters will be verified before ignition as well as during the ignition phase of the project. Ambient weather conditions will be monitored and recorded hourly. Appropriate forecasts (including smoke dispersion forecast) will be obtained from the NWS in Pendleton, Oregon at 541-276-7832. Fire behavior observations will be monitored and recorded. Photos will be taken to document smoke dispersion and fuel consumption. During the burn, on site monitoring will be conducted by the lead Fire Monitor or other assigned Fire Monitors. These people will be responsible for the collection and documentation of weather, smoke, and fire behavior observations according to National Park Service monitoring protocols. Few fire effects monitoring plots currently exist within the project area, so additional plots may be installed as needed. Prior to burning any portion of this project area the Chief, Interpretation & Resource Management will determine which plots will be affected and schedule pre-, during, and post-burn monitoring of these plots as necessary.

Following the burn, the Chief, Interpretation & Resource Management will complete a fire monitoring report that summarizes weather and fire behavior observations in relation to ignition operations and any initial observations of first order fire effects. Long-term evaluation of how successful the burn was in achieving burn plan goals and objectives will be conducted by park staff and Fire Effects Monitors from North Cascades National Park. Post-burn critiques of operations will be conducted after the operation and will include all overhead personnel and as many other personnel involved with the project as possible. The Chief, Interpretation & Resource Management will complete a written summary of this evaluation. Whitman Mission NHS will use the fire monitoring protocols developed by the Pacific West Region of the NPS and adapted for use at the park. Fire monitoring guidelines specific to the site can be found in Appendix P of the Fire Management Plan for Whitman Mission NHS.

R. POST FIRE REHABILITATION

Rehabilitation will follow recommendations from resource management professionals at Univ. of Idaho and National Park Service and the Burned Area Emergency Rehabilitation Handbook. No treatment of burn units would be contrary to National Park Service policies, the Whitman Mission

Resources Management Plan, or the Whitman Mission Fire Management Plan. The Chief, Interpretation & Resource Management is responsible for ensuring that appropriate recommended rehabilitation measures are adhered to and implemented. No fire line will be dug, so there will be no ground disturbance. After the burn, park staff may drive over the area spraying herbicide on broadleaf weeds. These areas may be over-seeded or reseeded.

S. POST FIRE REPORTS

The Chief, Interpretation & Resource Management will prepare an Individual Fire Report, DI-1202, within ten days after the fire that summarizes weather, fire behavior, and smoke observation data. The park staff will also ensure that the National Fire Plan Operational Reporting System is updated during the same time the DI-1202 is completed. The park staff will maintain a project file that includes the burn unit plan, spot weather forecasts, and all required reports.

VICINITY MAP

PROJECT MAP: PRESCRIBED FIRE BURN UNITS

Prescribed Fire Hazard Rating Guide

| Hazard Element | Hazard Probability | | | Potential Consequences | | |
|------------------------------|--|---|--|---|--|--|
| | L | M | H | L | M | H |
| 1. Environmental Data | | | | | | |
| a. Seasonal severity | Energy Release Component below 10-year average level. Palmer Drought Index +2 or greater. | Energy Release Component at or above 90th percentile levels – above average drought conditions. Palmer Drought Index between +2 and –2. | Energy Release Component at or above 97th percentile levels – severe drought conditions. Palmer Drought Index below –2. | Low probability for problematic fire behavior or difficulty in holding activities. Spot fires and/or escapes would be easily contained with resources onsite. | Some potential for problematic fire behavior or difficulty in holding activities. Spot fires and/or escapes that are not quickly detected would require most onsite resources and cause suspension of ignition activities. | High probability for problematic fire behavior and difficulty in control. Spot fires or escapes might require multiple resource types (e.g.: handcrews and engines) and /or multiple teams of resources (more than 3 engines or handcrews) to contain. |
| b. Fire Behavior | Flame lengths confined to surface fuels, spread rates low. Rate of Spread under 50 ch/hr. Spot fires not likely | Flame lengths extending into shrub and tree regeneration, spread rates moderate. Rate of Spread 50 – 125 ch/hr. Fire torching individual shrubs; spot fires possible. | Flame lengths highly variable, frequently involving individual tree crowns, spread rates moderate to fast. Rate of Spread over 125 chains/hour. Frequent spotting. | Low probability of difficulty in holding fire or for adverse fire effects. No or few spot fires expected; all spots would be easily extinguished with holding forces. | Some potential for fire behavior to approach upper prescription limits and cause undesirable effects. Spot fires would require temporary interruption of firing operations. | High potential for fire behavior to create holding problems, exceed prescription ranges, and cause undesirable effects escape fires would be difficult to contain. |
| c. Fuels | Surface fuels light, small shrub component present and widely scattered. 1 hour Fuel moisture over 12 %. Fuels outside unit likely lower flammability than those within the unit | Surface fuels moderate with moderate shrub presence. 1 hour fuel moisture 8 – 12 %. Fuels outside unit same flammability as those within unit | High surface fuel loading. 1 hour fuel moisture under 8%. Fuels outside unit greater flammability than those within unit. | Fuels present no specific implementation problems. | Fuels will have a marked effect on implementation activities and holding force requirements. | Once firing has started it is very difficult to hold fire within segments of the unit; narrow range of weather conditions that would meet objectives while retaining control of burn; continuous adjustment of firing operations (rate and strip width/firing pattern) necessary to retain |

| | | | | | | control; |
|---|---|---|---|--|---|--|
| d. Weather | Weather stable, winds Under 5 mph and predictable, no frontal activity. Rh 50% or above. | Weather slightly variable, winds present but light, 5-10 mph, occasional gusts, no frontal activity. Rh 30 – 50%. | Weather highly variable, winds over 10 mph, gusts prevalent, frontal activity possible. Rh under 30%. | Little impact on implementation. Any changes in fire behavior would occur slowly and ignition/holding operations would be able to anticipate the changes and easily adjust to them | Weather variation will require mitigation actions involving additional resources. Adjustments to firing and holding would be made frequently, oftentimes with little advance notice of the need to adjust. | Weather will serve as a major influence on organization, personnel qualifications, and specific implementation actions. Escape fires would be difficult to contain. |
| e. Topography | Low variability in slope and aspect. | Some variability in slope and aspect, will affect fuel moisture and fire behavior. | High variability in slope and aspect, major implications on fire behavior and must be considered in prescription development and implementation. | Little influence on burn implementation. Terrain allows for rapid deployment (ease of movement) of ignition and holding resources | Consideration of topography during planning process is necessary. Terrain variability causes changes in fire behavior that would require adjustments to ignition patterns and holding forces during the operation | Topography will necessitate mitigation actions to be developed and firing patterns and ignition methods to be modified to reduce impacts. Terrain features contribute to unusual fire spread/behavior or increased spread behavior at unusual times potentially increasing escape risk and threats to ignition/holding personnel |
| Hazard Element | Hazard Probability | | | Potential Consequences | | |
| | L | M | H | L | M | H |
| 2. Agency Values | | | | | | |
| a. Ecological and Environmental Considerations | Fire poses little threat to cause adverse effects or long-term disturbances to natural resource values. No T and E species or critical habitat. | Fire poses moderate threat of adverse effects on natural resources and may cause short- to midterm alterations or inconveniences such as air quality. Natural resources within and immediately adjacent to unit could be degraded by fire (areas with “no-burn” | Fire poses high potential for adverse effects to natural resource values or to cause long-term degradations in air quality. Some T and E species present and/or critical habitat. | Low probability for adverse impacts and little need for mitigation actions. | Mitigation actions may need to be developed to ensure desirable outcomes. Some short-term effects may have to be accepted. Objectives include protection of natural resources within and/or immediately adjacent to the | Prescribed Fire Plan must address mitigation actions to prevent undesirable outcomes. |

| | | | | | | |
|--|--|---|--|---|--|--|
| | | objectives within and adjacent to unit). Small amounts of T and E species present. | | | burn; minor errors in implementation or unforeseen prescription failures (e.g.: unforecasted winds) likely to cause resource damage | |
| b. Social and Cultural Values | No known social or cultural values in or adjacent to the project area. | Features of social or cultural value have been identified in and adjacent to the project area. Mitigation measures can be accomplished. | High social or cultural values have been identified in or adjacent to the project area. Mitigation actions are difficult to accomplish. | Protection of social or cultural values create no impacts to firing, holding, or mop up organizations or strategy/tactics; likely no public concern over implementation of burn | Small escapes, slopovers, or spot fires have potential to create controversy and would require rehabilitation | Small escapes, slopovers, or spot fires have potential to cause irreparable damage to social and/or cultural values; implementation of the burn (even successful) has potential to create great public controversy |
| c. Project Duration and Logistics | Project is short-term. Vehicle access to all portions of unit perimeter | Fire planned to be of short to moderate duration, logistical needs pose some difficulty. portions of unit have vehicle access | Fire planned to be of moderate to long duration, logistical needs create much difficulty in accomplishing. no portion of fire perimeter is accessible by vehicle | Personnel easily scheduled; weather forecasts likely to be accurate; all transportation methods available for logistical support | Duration may impact firefighters and public and logistical needs must be specifically addressed. Personnel scheduling becomes complicated due to required days off and unforeseen events; weather forecasts become less accurate | Long duration fire necessitates greater information dissemination, mitigation to remove impacts to firefighters and the public, and logistical needs must be met or project postponed. |
| d. Smoke and Air Quality Management | Few smoke sensitive areas near project area. No potential scheduling conflicts with cooperators. Any smoke impacts persist for <2 hours. | Multiple smoke sensitive areas, mitigation actions minimize impacts, low potential for scheduling conflicts. Any smoke impacts persist for 2-3 hours. | Multiple smoke sensitive areas near burn unit, mitigation actions unable to remove all impacts, duration increases impacts, high potential for scheduling conflicts. duration of impacts >3 hours. | No adverse smoke consequences. | Short-term smoke impacts possible; nuisance smoke complaints likely | Mitigation actions must be developed, regulatory agencies must concur, scheduling conflicts may restrict implementation. high likelihood of complaints from public; opportunities to burn within prescription very |

| | | | | | | limited (increases complexity of personnel and other resource scheduling); |
|---------------------------|---|--|--|----------------------------------|--|---|
| Hazard Element | Hazard Probability | | | Potential Consequences | | |
| | L | M | H | L | M | H |
| 3. Public Values | | | | | | |
| a. Land use values | No commercial or agriculture activities near planned burn area. | Land use values on lands adjacent to burn susceptible to damage from fire. | Planned burn in close proximity to urban, commercial, and/or agriculture areas. | No impacts from land use values. | Prescribed Fire Plan must consider actions to prevent fire movement onto adjacent lands. Potential for public complaints following prescribed fire (especially if any escape occurs) | Significant potential for public complaints prior to and following prescribed burn; lawsuits likely if any escape occurs. |
| b. Dwellings | No permanent or part time residences present in area. | Some part-time residences or outbuildings near burn area. | Planned burn is located in wildland-urban interface zone, permanent residences in close proximity. | No impacts from dwellings. | Potential for destruction of dwelling if fire escapes | Potential for significant loss of multiple dwellings if prescribed fire escapes; lawsuits likely if any escape occurs |
| c. Non-dwellings | No non-dwellings present. | Some outbuildings and non-residences near burn unit. No absolute barriers to fire spread between dwelling(s) and burn perimeter. | Commercial structures in close proximity to burn area. | No impacts. | Potential for destruction of dwelling if fire escapes | Potential for significant loss of multiple dwellings if prescribed fire escapes; lawsuits likely if any escape occurs |

| Hazard Element | Hazard Probability | | | Potential Consequences | | |
|---------------------------|---|---|--|--|--|--|
| | L | M | H | L | M | H |
| 4. Human Factors | | | | | | |
| a. Firefighter | Little firefighter exposure to smoke; low wind speed and higher relative humidity create low rates of spread and flame lengths. | Some firefighter exposure due to fire duration and smoke; moderate wind speed and r relative humidity create rates of spread and flame lengths that preclude direct attack at head of fire. | Potential for high firefighter exposure to smoke during burn and to fire during holding actions. Rate of spread and flame length at or exceeding prescription. | No specific problems, implement standard safety measures. | Mitigation measures to eliminate smoke and fire duration exposure. Ignition and holding actions must be well coordinated. | Mitigation measures must address smoke exposure, use of mechanized equipment to eliminate exposure to fire. |
| b. Public | Low likelihood of intense or multiple-hour smoke exposure to public | Some public exposure, potential for limited, short duration exposure to smoke | Public may be exposed to high smoke concentrations for over 3 hours. | No adverse consequences anticipated. | Mitigation actions necessary to provide for maximum public safety; low potential for complaints. | High potential for public to be exposed to smoke concentrations for moderately long periods, if fire escapes, high potential for adverse effects on public due to heat and smoke |
| c. Fire Management | No problems with commitment and acceptance by park staff members; excellent coordination with non-fire park staff. | No problems with commitment but some unwillingness to support and prioritize the prescribed fire over other activities. | Park staff not committed to using prescribed fire as a tool and not willing to support and prioritize prescribed fire over other activities. | Low potential for unexpected burn results; low potential for errors in implementation of burn plan | Park staff must be briefed on need and importance of prescribed fire. moderate potential for errors in implementation of burn plan | Park management team must be informed of prescribed fire objectives, support needs, and priority. high potential for errors in implementation that cause problems with achieving burn objectives |

WHITMAN MISSION PRESCRIBED FIRE RISK ANALYSIS WORKSHEET

| Hazard Element | Hazard Probability | | | Potential Consequences | | | *Risk (Appendix 5) |
|--|--------------------|---|---|------------------------|---|---|-----------------------|
| | L | M | H | L | M | H | |
| 1. Environmental Data | | | | | | | |
| a. Seasonal severity | | X | | X | | | M |
| b. Fire Behavior | | X | | X | | | M |
| c. Fuels | | X | | X | | | M |
| d. Weather | | X | | X | | | M |
| e. Topography | | X | | X | | | M |
| 2. Agency Values | | | | | | | |
| a. Ecological and Environmental Considerations | X | | | X | | | L |
| b. Social and Cultural Values | | X | | | X | | M |
| c. Project Duration and Logistics | X | | | X | | | L |
| d. Smoke and Air Quality Management | | X | | | X | | M |
| 3. Public Values | | | | | | | |
| a. Land use values | | | X | | X | | H |
| b. Dwellings | | | X | | X | | H |
| c. Non-dwellings | | X | | | X | | M |
| 4. Human Factors | | | | | | | |
| a. Firefighter | | X | | X | | | M |
| b. Public | | X | | X | | | M |
| c. Fire Management | X | | | X | | | L |

RATIONALE & MITIGATIONS: (Record below or on additional sheets)

Risk is determined using the Risk – Assessment Matrix (NPS Wildland Fire Management Reference Manual – 18, Chapter 10, Exhibit 4, page 33) by finding the intersection between the hazard probability and the potential consequence and entering the value as the “Risk” for that element.

Mitigations and controls to be taken will be identified and documented for each element defined above the Low Risk Level in the Prescribed Fire Risk Mitigation Table (Appendix 5) and in the various applicable elements in the Prescribed Fire Plan. The highest risk value will be carried forward to the Prescribed Fire Complexity Rating Worksheet (Appendix 6) as a reminder of those hazard elements requiring mitigation.

PRESCRIBED FIRE RISK MITIGATION TABLE

Whitman Mission NHS

| Hazard Element | Risk | Mitigations / Controls | Residual Risk | Reference: |
|-----------------------|------|---|---------------|--|
| | | Briefly explain what actions will be taken relative to each hazard element that will reduce the risk. | | In Prescribed Fire Plan |
| 1. Environmental Data | | | | |
| a. Seasonal Severity | M | <ul style="list-style-type: none">Because of the nature of the fuels (dead grass), burning in early spring will be required to meet resource objectives.The potentially moderate seasonal severity will be partially mitigated by having a large number of holding forces as well as utilizing water-handling equipment. | L | <ul style="list-style-type: none">C. Description of Project AreaD. Goals and objectivesK. Ignition and HoldingF. Organization |
| b. Fire Behavior | M | <ul style="list-style-type: none">Firing patterns will be adjusted depending on wind direction and fire behaviorFire behavior monitoring and frequent communications regarding current behavior will occur.Backing and flanking fires will be utilized to reduce flame lengths and rates of spread. | L | <ul style="list-style-type: none">K. Ignition and HoldingF. OrganizationJ. Prescription |

| | | | | |
|--|------|--|---------------|---|
| c. Fuels | M | <ul style="list-style-type: none">Removal of dead and down material (as determined by the burn boss and/or holding boss) immediately adjacent to Target Area boundary lines to reduce heat and spotting across lines.Holding personnel will patrol boundaries and aggressively suppress spot fires and slopovers. | L | <ul style="list-style-type: none">I. Pre-Burn ConsiderationK. Ignition and HoldingF. Organization |
| d. Weather | M | <ul style="list-style-type: none">Ignition will be dependent upon weather conditions meeting prescription parametersA test fire will be executed to determine feasibility of project implementationHolding personnel will be assigned to locations commensurate with wind direction, thus reducing spot fire and slopover potential.Ignition will take place only when favorable weather conditions are forecasted. | L | <ul style="list-style-type: none">J. PrescriptionK. Ignition and HoldingF. Organization |
| e. Topography | M | <ul style="list-style-type: none">Ignition patterns will take into account topographical changesHolding personnel will be strategically, but safely, located to watch for and suppress spot fires and slopovers. | L | <ul style="list-style-type: none">K. Ignition and HoldingF. Organization |
| Hazard Element | Risk | Mitigations / Controls | Residual Risk | Reference: |
| | | Briefly explain what actions will be taken relative to each hazard element that will reduce the risk. | | In Prescribed Fire Plan |
| 3. Agency Values | | | | |
| a. Ecological and environmental considerations | L | ----- | ---- | ----- |

| | | | | |
|--|----------|--|----------|---|
| b. Social and Cultural values | M | <ul style="list-style-type: none"> • Cultural clearances completed and Resource Management surveys completed. • Mitigations can be achieved through careful ignition and the abundance of holding forces, especially the use of one or two engines. | L | <ul style="list-style-type: none"> • M. Protection of Sensitive Features • K. Ignition and Holding • F. Organization • J. Prescription |
| c. Project duration and logistics | L | ----- | ----- | ----- |
| d. Smoke and Air Quality Management | M | <ul style="list-style-type: none"> • Acreage of active ignition will be limited to 45 acres a day. • Ignition will not occur during holiday weekends to reduce the impact to the tourism industry. • The fire must be out by 6:00 p.m. as required by the burn permit. • “Smoke in Area” signs will be posted. | L | <ul style="list-style-type: none"> • I. Preburn Considerations • N. Public and Personnel Safety • O. Smoke Management and Air Quality • H. Scheduling |

| Hazard Element | Risk | Mitigations / Controls | Residual Risk | Reference: |
|--------------------|------|--|---------------|---|
| | | Briefly explain what actions will be taken relative to each hazard element that will reduce the risk. | | In Prescribed Fire Plan |
| 3. Public Values | | | | |
| a. Land use values | H | <ul style="list-style-type: none">• The potentially high risk will be partially mitigated by having a large number of holding forces as well as utilizing water-handling equipment.• Ignition patterns will take into account topographical changes.• Holding personnel will be strategically, but safely, located to watch for and suppress spot fires and slopovers.• Adjacent landowners will be notified. | M | <ul style="list-style-type: none">• K. Ignition and Holding• F. Organization• I. Preburn Considerations• J. Prescription |
| b. Dwellings | H | <ul style="list-style-type: none">• Firing patterns will be adjusted depending on wind direction and fire behavior• Backing and flanking fires will be utilized to reduce flame lengths and rates of spread.• Adjacent landowners will be notified.• Will have a large number of holding forces as well as utilizing water-handling equipment. | M | <ul style="list-style-type: none">• K. Ignition and Holding• F. Organization• I. Preburn Considerations• J. Prescription |
| c. Non-dwellings | M | <ul style="list-style-type: none">• Firing patterns will be adjusted depending on wind direction and fire behavior• Backing and flanking fires will be utilized to reduce flame lengths and rates of spread.• Adjacent landowners will be notified. | L | <ul style="list-style-type: none">• K. Ignition and Holding• F. Organization• I. Preburn Considerations |

| Hazard Element | Risk | Mitigations / Controls | Residual Risk | Reference: |
|--------------------|------|--|---------------|--|
| | | Briefly explain what actions will be taken relative to each hazard element that will reduce the risk. | | In Prescribed Fire Plan |
| 4. Human Factors | | | | |
| a. Firefighter | M | <ul style="list-style-type: none">Mitigations can be achieved through careful ignition and the abundance of holding forces, especially the use of one or two engines.Ignition patterns will take into account topographical changesIgnition will be dependent upon weather conditions meeting prescription parametersBecause of the nature of the fuels (dead grass), burning in early spring will be required to meet resource objectives and firefighter safety.Backing and flanking fires will be utilized to reduce flame lengths and rates of spread. | L | <ul style="list-style-type: none">F. OrganizationK. Ignition and HoldingC. Description of Project AreaJ. PrescriptionH. Scheduling |
| b. Public | M | <ul style="list-style-type: none">Signing will be implemented along trails and in Visitor Center.A public information officer or designee will be present at the Visitor Center and where prescribed fire activity is visible to the public. | L | <ul style="list-style-type: none">I. Pre-Burn ConsiderationN. Public and Personnel SafetyP. Interagency Coordination and Public Information |
| c. Fire Management | L | ----- | ---- | ----- |

WHITMAN MISSION NATIONAL HISTORIC SITE PRESCRIBED FIRE COMPLEXITY RATING WORKSHEET

| Complexity Element | | Complexity Value | | |
|---|---|------------------|----------|---|
| | | L | M | H |
| Primary Factors | 1. Life and Safety | | X | |
| | 2. Threats to Boundaries | | X | |
| | 3. Management Organization | X | | |
| | 4. Political Concerns | | X | |
| | <i>SUBTOTAL OF PRIMARY FACTORS</i> | 1 | 3 | |
| Secondary Factors | 5. Objectives | | X | |
| | 6. Fuels and Fire Behavior | X | | |
| | 7. Air Quality Values | | X | |
| | 8. Improvements | | X | |
| | 9. Logistics | X | | |
| | 10. Natural, Cultural and Social Values | | X | |
| | 11. Tactical Operations | X | | |
| | 12. Interagency Coordination | | X | |
| <i>SUBTOTAL OF SECONDARY FACTORS</i> | | 3 | 5 | |
| TOTAL COUNT OF COMPLEXITY VALUES | | 4 | 8 | |

Note: The above values were determined using the Complexity Value Guide (Appendix 7)

QUALIFICATIONS DETERMINATION TABLE:

| | Prescribed Fire Burn Boss Type 2 (RXB2) | Prescribed Fire Burn Boss Type 1 (RXB1) |
|---------------------------|---|--|
| Primary Factors rated "H" | Less than 2 | 2 or more |
| | AND | OR |
| Total Count rated "H" | Less than 4 | 4 or more |
| | | OR |
| | <u>Minimum</u> required on all prescribed fires. | When deemed appropriate by the Superintendent or unit Fire Management Officer. |

Prescribed Fire Burn Boss Level Indicated (check one): ☐ RXB1 ☐ RXB2 ☒ X

PREPARED BY: Roger Trick

DATE: 01/15/2003

APPROVAL BY: _____

DATE: _____

Francis T. Darby, Superintendent

REVIEWED BY: _____

DATE: _____

(Burn Boss immediately prior to burning)

Wildland Fire Management Reference Manual-18 – Chapter 10
Complexity Value Guide

| COMPLEXITY ELEMENT | GUIDE TO COMPLEXITY VALUE | | |
|--------------------------------|---|---|--|
| | L | M | H |
| Life and Safety | Safety issues are easily identifiable and mitigated | <ul style="list-style-type: none"> Number of significant issues have been identified All safety hazards have been identified on the LCES worksheet and mitigated | <ul style="list-style-type: none"> SOF1 or SOF2 required Complex safety issues exist |
| Threats to Boundaries | <ul style="list-style-type: none"> Low threat to boundaries POI<50% Boundaries naturally defensible | <ul style="list-style-type: none"> Moderate threat to boundaries 50<POI<70% Moderate risk of slopover or spot fires Boundaries need mitigation actions for support to strengthen fuel breaks, fire lines, etc. | <ul style="list-style-type: none"> High threat to boundaries POI>70% High risk of slopover or spot fires Mitigation actions necessary to compensate for continuous fuels |
| Management Organization | <ul style="list-style-type: none"> Span of control held to 3 Single resource incident or project | <ul style="list-style-type: none"> Span of control held to 4 Multiple resource incident or project Short-term commitment of specialized resources | <ul style="list-style-type: none"> Span of control greater than 4 Multiple branch, divisions or groups Specialized resources needed to accomplish objectives Organized management team (FUMT, IMT) |
| Political Concerns | <ul style="list-style-type: none"> No impact on neighbors or visitors No controversy No media interest | <ul style="list-style-type: none"> Some impact on neighbors or visitors Some controversy, but mitigated Press release issued, but no media activity during operations | <ul style="list-style-type: none"> High impact on neighbors or visitors High internal or external interest and concern Media present during operations |
| Objectives | <ul style="list-style-type: none"> Maintenance objectives Prescriptions broad Easily achieved objectives | <ul style="list-style-type: none"> Restoration objectives Reduction of both live and dead fuels Moderate to substantial changes in two or more strata of vegetation Objectives judged to be moderately hard to achieve Objectives may require moderately intense fire behavior | <ul style="list-style-type: none"> Restoration objectives in altered fuel situations Precise treatment of fuels and multiple ecological objectives Major change in the structure of 2 or more vegetative strata Conflicts between objectives and constraints Requires a high intensity fire or a combination of fire intensities that is difficult to achieve |

| COMPLEXITY ELEMENT | GUIDE TO COMPLEXITY VALUE | | |
|---|--|--|---|
| | L | M | H |
| Fuels/Fire Behavior | <ul style="list-style-type: none"> • Low variability in slope & aspect • Weather uniform and predictable • Surface fuels (grass, needles) only • Grass/shrub, or early seral forest communities • Short duration fire • No drought indicated | <ul style="list-style-type: none"> • Moderate variability in slope & aspect • Weather variable but predictable • Ladder fuels and torching • Fuel types/loads variable • Dense, tall shrub or mid-seral forest communities • Moderate duration fire • Drought index indicates normal conditions to moderate drought; expected to worsen | <ul style="list-style-type: none"> • High variability in slope & aspect • Weather variable and difficult to predict • Extreme fire behavior • Fuel types/loads highly variable • Late seral forest communities or long-return interval fire regimes • Altered fire regime, hazardous fuel /stand density conditions • Potentially long duration fire • Drought index indicates severe drought; expected to continue |
| Air Quality Values to be Protected | <ul style="list-style-type: none"> • Few smoke sensitive areas near fire • Smoke produced for less than 1 burning period • Air quality agencies generally require only initial notification and/or permitting • No potential for scheduling conflicts with cooperators | <ul style="list-style-type: none"> • Multiple smoke sensitive areas, but smoke impact mitigated in plan • Smoke produced for 2-4 burning periods • Daily burning bans are sometimes enacted during the burn season • Infrequent consultation with air quality agencies is needed • Low potential for scheduling conflicts with cooperators | <ul style="list-style-type: none"> • Multiple smoke sensitive areas with complex mitigation actions required • Health or visibility complaints likely • Smoke produced for greater than 4 burning periods • Multi-day burning bans are often enacted during the burn season • Smoke sensitive class 1 air sheds • Violation of state and federal health standards possible • Frequent consultation with air quality agencies is needed • High potential for scheduling conflicts with cooperators |
| Improvements to be Protected | <ul style="list-style-type: none"> • No risk to people or property within or adjacent to fire | <ul style="list-style-type: none"> • Several values to be protected • Mitigation through planning and/or preparations is adequate • May require some commitment of specialized resources | <ul style="list-style-type: none"> • Numerous values and/or high values to be protected • Severe damage likely without significant commitment of specialized resources with appropriate skill levels |
| Logistics | <ul style="list-style-type: none"> • Easy access • Duration of fire support is less than 4 days | <ul style="list-style-type: none"> • Difficult access • Duration of fire support between 4 and 10 days • Logistical position assigned • Anticipated difficulty in obtaining resources | <ul style="list-style-type: none"> • No vehicle access • Duration of support is greater than 10 days • Multiple logistical positions assigned • Remote camps and support necessary |

| COMPLEXITY ELEMENT | GUIDE TO COMPLEXITY VALUE | | |
|---|--|---|--|
| | L | M | H |
| Natural, Cultural, and Social Values to be Protected | <ul style="list-style-type: none"> No risk to natural, cultural, and/or social resources within or adjacent to fire | <ul style="list-style-type: none"> Several values to be protected Mitigation through planning and/or preparations is adequate May require some commitment of specialized resources | <ul style="list-style-type: none"> Numerous values and/or high values to be protected Severe damage likely without significant commitment of specialized resources with appropriate skill levels |
| Tactical Operations | <ul style="list-style-type: none"> No ignition or simple ignition patterns Single ignition method used Holding requirements minimal | <ul style="list-style-type: none"> Multiple firing methods and/or sequences Use of specialized ignition methods (i.e. terra-torch, Premo Mark III) Resources required for up to one week Holding actions to check, direct, or delay fire spread | <ul style="list-style-type: none"> Complex firing patterns highly dependent upon local conditions Simultaneous use of multiple firing methods and/or sequences Simultaneous ground and aerial ignition Use of heli-torch Resources required for over one week Multiple mitigation actions at variable temporal and spatial points identified. Success of actions critical to accomplishment of objectives Aerial support for mitigation actions desirable/necessary |
| Interagency Coordination | <ul style="list-style-type: none"> Cooperators not involved in operations No concerns | <ul style="list-style-type: none"> Simple joint-jurisdiction fires Some competition for resources Some concerns | <ul style="list-style-type: none"> Complex multi-jurisdictional fires High competition for resources High concerns |

APPENDIX 8 FIRE MODELING OUTPUTS

ADEQUATE HOLDING RESOURCES WORKSHEET FOR PRESCRIBED FIRE

Project Name: **Whitman Mission NHS**

Fuel Models Inside Project Area 3

Prepared By/Date: Roger Trick 01/25/2003

Outside Project Area: 8

| Characteristics | Output type | Modeling Predictions Inside Project Area | Modeling Predictions Outside Project Area | Unit of Measure |
|--|--------------------------|---|--|--------------------|
| CRITICAL FIRE INPUTS | 1 Hr Fuel Moisture | 8 | 8 | % |
| | Wind Speed (MFWS) | 6 | 6 | MPH |
| | Slope | 0 | 0 | % |
| KEY FIRE BEHAVIOR OUTPUTS | Rate of Spread (ROS) | 129 | 2 | ch/hr |
| | Fireline Intensity | 1625 | 7 | BTU/ft/sec |
| | Flame Length | 14 | 1 | Feet |
| | Probability of Ignition | 40 | 40 | % |
| | Spotting Distance | 0.5 | 0.1 | Miles |
| | Scorch Height | N/A | N/A | Feet |
| FIRE SIZE | Projection Time | 0.5 | 0.1 | Hours |
| | Forward Spread | 65 | 1.1 | Chains |
| | Backward Spread | 3 | 0 | Chains |
| FIRE CONTAINMENT | Method Of Attack | Rear | Rear | Head/Rear |
| | Max Escape Target | 20 | 1 | Acres |
| | Max Containment Time | 0.3 | 1.0 | Hours |
| | Total Line Building Rate | 267 | 14 | Ch/hr |
| 1. Choose greater total line building rate from inside and outside the project area | | 14* This is for spot fires outside the park boundary. See Section E, page 9 for spot fires into another burn area within the park. With the small size of units & rapid Rate Of Spread, containment actions will be limited to fuel model 8 areas. | | Ch/hr |
| | | 2. Estimate potential number spot fires or slopovers at one time: | | 1 |
| | | 3. TOTAL LINE BUILDING RATE NEEDED (multiply line 1 times line 2) | | 14 |

Production Rates: Ease of Access: POOR-FAIR-GOOD-EXCELLENT
(refer to fire line handbook other sources and local knowledge)

| On Site Organization | Total # Planned On Burn | Total # Dedicated to Prescribed Fire | Total # Available for Spot Fire or Slopover Control | | Line Building Production Rates | | Spot Fire or Slopover Line Building Capacity |
|--|-------------------------------|--|---|---|---|-------|---|
| Overhead | 1 | 1 | 0 | X | 0.7 | ch/hr | 0 |
| Firing Crew | 3 | 3 | 3 | X | 0.7 | ch/hr | 2 |
| Holding | 4 | 4 | 4 | X | 0.7 | ch/hr | 3 |
| Fire Behavior Monitors | 0 | 0 | 0 | X | 0.7 | ch/hr | 0 |
| Engine (Crew of 2) | 2 | 2 | 2 | X | 5 | ch/hr | 10 |
| 4. TOTAL CAPACITY | | | | | | | 15 |
| 3. TOTAL LINE BUILDING RATE NEEDED (from table above) | | | | | | | 14 |
| 5. DETERMINATION OF ADEQUATE HOLDING RESOURCES (Line 4 minus Line 3) | | | | | | ch/hr | +1 |

If number on line 5 is positive then adequate holding forces will be available. If number is negative, more holding resources are needed.

Date: _____

APPENDIX 11
Prescribed Fire Operations
GO/NO-GO Checklist

Prescribed Fire Name: **Whitman Mission NHS**

Date:

| | YES | NO |
|---|-----|----|
| - Has Superintendent GO/NO-GO Pre-Ignition Approval been approved? | | |
| Narrative/Comments: | | |
| - Are current and forecasted weather conditions favorable for execution of the prescribed fire? (hints: spot weather, dialogue with fire weather forecaster, climatological analysis complete) | | |
| Narrative/Comments: | | |
| - Have all key personnel listed on the Prescribed Fire Plan been briefed with an opportunity to give feedback? (hints: safety, objectives, assignments) | | |
| Narrative/Comments: | | |
| - Has all pre-burn preparedness work been completed? (hints: fuels and weather observations, signs, closures, smoke management, unit preparation) | | |
| Narrative/Comments: | | |
| - Are all equipment and supplies required in the prescribed fire plan in place and functional? (hints: pumps, radios, ignition devices, hose lays, vehicles, aviation, etc.) | | |
| Narrative/Comments: | | |
| - Are all holding resources described in the Plan committed and can be on-scene within specified time frames? | | |
| Narrative/Comments: | | |
| - Are all personnel certified for their assigned positions? (hints: Check Red Cards) | | |
| Narrative/Comments: | | |
| - There are no extenuating circumstances that preclude successful completion of this project? (hints: regional & national preparedness, unusual circumstances, unusual drought, outstanding issues, other fires, recent fire escapes, etc.) | | |
| Narrative/Comments: | | |
| IF ALL BOXES HAVE BEEN CHECKED "YES" YOU MAY PROCEED WITH THE TEST FIRE. | | |

| | | |
|--|-----|----|
| | YES | NO |
| TEST FIRE DOCUMENTATION AND RESULTS: | | |
| - Observed Fire Behavior within Prescription? | | |
| Narrative/Comments: | | |
| - Test fire was successful? | | |
| Narrative/Comments: | | |
| - Are all prescription parameters in the prescribed fire plan favorable for implementing the project? (hints: each plan element, pre-burn, smoke management, cooperators coordination) | | |
| Narrative/Comments: | | |
| IF LAST 3 BOXES ARE ALL "YES", YOU MAY PROCEED WITH PRESCRIBED FIRE. | | |

Signatures

| | |
|----------------------------|---|
| <u>RX BURN BOSS:</u> | <u>IGNITION SPECIALIST (may be collateral):</u> |
| <u>HOLDING OPERATIONS:</u> | <u>DATE:</u> |

APPENDIX 12
CHECKLIST OF PRE-BURN PRESCRIBED FIRE ACTIVITIES

Whitman Mission NHS

CHECKLIST OF PRE-BURN PRESCRIBED FIRE ACTIVITIES

| BURN PLAN ADDITIONS | COMMENTS | BY/WHEN |
|---|------------------------------|----------------|
| Fire Complexity Worksheet | | |
| Vicinity Map | | |
| Project Map | | |
| Firing Map | | |
| Modeling Predictions-BEHAVE | | |
| Archaeological/Cultural Clearance | | |
| Vegetation Clearance | | |
| Wildlife Clearance | | |
| PRE-BURN PREPARATION CHECKLIST | SPECIFIC COMMENTS | BY/WHEN |
| Send Copies of Approved Plan To: CCSO and PWR | | |
| Burn Unit Prep Work Completed | | |
| Equipment/supplies staged onsite | | |
| Weather Station/Fuel Stick on Site | | |
| Assigned Burn Personnel Notified. All Non-NPS Personnel Have Been Ordered. | | |
| USFS and Adjacent Cooperators Notified | | |
| Public Info Announcements Completed and Approved by Superintendent (send copies out ASAP and day before burn) also send copies to Park Visitor Center. | | |
| Park Division Chiefs and Superintendent Notified at Least 1 week in Advance. | | |
| Spot Weather Forecasts obtained. | | |
| Fire Effects plots installed/reread | | |
| Fuel moisture sampling completed | | |
| | | |
| | | |

| | | | |
|--|---|--|--|
| Whitman Mission NHS | | | APPENDIX 13 JOB HAZARD ANALYSIS |
| USDI-National Park Service Whitman Mission National Historic Site | Identify Job or Project to Be Analyzed Prescribed Burning | Date of Analysis 08/30/01 01/07/03 | Reference Material Used for this Analysis DOI Departmental Manuals (DMs) DOI Operational Procedures Memorandums (OPMs) NWCG Interagency Incident Business Management Handbook NWCG Fireline Handbook – PMS 410-1 |
| | Name of Analyst P. Stephen R. Trick | Job Title of Analyst Prescribed Fire Tech. Chief, Resource Mgmt. | |

| Hazards | Actions to Eliminate Hazards: Specify safe work procedures and personal protective equipment needed to do the job. |
|---|---|
| Potentially Inexperienced Crew | <p>Read DO# 18 Health and Safety section.</p> <p>Have new personnel obtain proper training. All burn personnel shall meet age, health and physical requirements established for regular firefighting duties as stated in NPS Wildland Fire Management Reference Manual - 18.</p> <p>Preburn safety briefings prior to each day of burning to clarify assignments, organization, responsibilities, communications, hazards, weather and expected fire behavior.</p> <p>Supervisory control at all times.</p> <p>Have inexperienced firefighters work with a safe, experienced firefighter.</p> |
| VEHICLE TRAVEL to and from worksite: Motor Vehicle accident. Slippery road surfaces. Soft Shoulders Narrow roadways Weather Smoke Darkness Other road Users Backing | <p>Review defensive driving techniques before driving to burn site.</p> <p>Perform inspections on equipment.</p> <p>Drive according to road conditions, use seat belts, use headlights, and use four-wheel drive when needed to maintain safe handling.</p> <p>Park vehicle and inspect road before you are in trouble.</p> <p>Reduce speed, turn on lights and keep to right side of road.</p> <p>Leave vehicle in low gear, set emergency break and chock wheels to prohibit vehicle from rolling.</p> <p>Scout roads and identify turnouts before ignition of project. Use “backers”.</p> |

| | |
|---|--|
| <p>FOOT TRAVEL to, from, and at work site.</p> <p>Slips and falls</p> <p>Carrying sharp hand tools/chainsaws</p> | <p>Be aware of wet logs (step over them not on them) lose rocks, made hazardous by snow/rain.</p> <p>Use extra caution on steep slopes.</p> <p>Wear high top (at least 8" high) lace up boots with non-skid soles.</p> <p>Maintain safe walking distance between people.</p> <p>Carry drip torch or tool on down hill side with sharp edges pointing down.</p> <p>If chainsaw is carried, the bar should remain covered when moving more than very short distances.</p> |
| <p>Exposure to fire and environment</p> <p>Injuries from:</p> <p>Falls</p> <p>Burns</p> <p>Extreme weather conditions</p> | <p>Wear approved hard hat with chin strap, eye protection, flame resistant fabric pants and shirts NPFA 1977 compliant.</p> <p>Keep sleeves rolled down.</p> <p>Avoid undergarments and socks made of 100 percent, or a high percentage of, polyester, nylon or acrylic. Wear leather, lace type, boots with skid resistant soles, and tops at least 8" high.</p> <p>Carry drinking water and fire shelter.</p> <p>Wear OSHA approved firefighting gloves.</p> <p>Wear hearing protection when working around equipment where noise level exceeds 85 dba.</p> <p>Wear additional protective equipment as dictated by local conditions and exposure to special equipment. Wear eye protection.</p> |
| <p>Fuel Mixing:</p> <p>Burns</p> <p>Spills</p> <p>Fuel saturated clothing</p> <p>Improper labeling</p> <p>Explosions</p> | <p>Transport fuel in approved, labeled containers secured in vehicle beds.</p> <p>Park and secure vehicles hauling flammables / combustibles in a separate, predetermined, safe area.</p> <p>No smoking within 25 feet of mixing and filling area.</p> <p>Do not fill or mix in pick-up bed with bed liners.</p> <p>Avoid use of cellular phones in and around fill or mixing area.</p> <p>Avoid fuel contact with bare hands, clothing and boots.</p> <p>Provide pour spouts. If spill occurs on clothing change clothing or leave the project area.</p> <p>Follow fuel mixture ratio as stated in the Burn Plan (section K).</p> <p>Label fuel mixture and ensure only mixed fuel is used in drip torches.</p> |
| <p>Igniting:</p> <p>Burns</p> <p>Falls</p> <p>Snags</p> <p>Smoke</p> <p>Rolling material</p> | <p>Always have an escape route. Maintain LCES. Follow the Standard Fire Orders and Watch Out Situations. Wear PPE as listed above.</p> <p>Be aware of overhead hazards.</p> <p>Use extra caution on slopes.</p> <p>Maintain communications with other lighters and RX Fire Ignition Specialist.</p> <p>Hand Held radios shall be provided to all lighters. Lighters shall be trained in the use of Drip Torches.</p> <p>Do not fill drip torches near ignition sources. Do not spill burn mix on clothing.</p> <p>Be alert to shifts in wind direction!</p> |

| | |
|--|---|
| | <p>Avoid smoke and fumes, especially when using fusees.</p> <p>Stay on the uphill side of objects that might roll.</p> |
| <p>Holding / Mop up / Patrol Crews</p> <p>Burns / eye injuries</p> <p>Falls</p> <p>Back injuries</p> <p>Smoke / CO poisoning</p> <p>Traffic</p> <p>Snags</p> <p>Rolling material</p> <p>Heat stress</p> <p>Dehydration</p> <p>Stump holes</p> | <p>Wear PPE as listed above, Protective clothing and equipment shall be the same as required for firefighting. Implement LCES, Follow Standard Fire Orders and Watch Out Situations.</p> <p>Be alert to shifts in wind direction!</p> <p>Receive briefing from Holding Boss, make certain assignments are understood.</p> <p>Identify and mark hazards in work area.</p> <p>Use warning lights and provide traffic control on roadways during smoky and night operations.</p> <p>Maintaining a high level of aerobic fitness is one of the best ways to protect yourself against back injuries and heat stress.</p> <p>Drink lots of fluids before, during and after work.</p> <p>Periodically rotate crews from work sites with high levels of smoke to areas of less smoke or smoke free areas.</p> <p>Set a reasonable work pace and allow adequate rest breaks while on the project.</p> <p>Be alert to potential rolling material, dig roll trenches if needed.</p> <p>Crews shall follow all guidelines in the NWCG Fireline Handbook Chapter 5 Firefighting Safety (Rev. 9/98). Maintain communications with the Burn Boss.</p> <p>During mop up and patrol, be especially cautious of stump holes and fire-weakened snags!</p> |
| <p>Hand Tools:</p> <p>Puncture wounds</p> <p>Cuts / Splinters</p> | <p>Ensure that tools remain in safe condition through periodic inspection and repair.</p> <p>Monitor employee performance periodically to ensure proper methods are used.</p> <p>Maintain safe working distance from crew members.</p> <p>Tool handles must be free of splinters, splits and cracks.</p> <p>Hand tools not in use on the project should be stored properly.</p> <p>Keep all sharp tools sheathed when not in use.</p> |
| <p>Chain saw use:</p> <p>Potentially inexperienced operator</p> <p>Rolling material</p> <p>Snags / widow makers</p> <p>Injury from saw cuts</p> <p>Falling hazards</p> | <p>Sawyers will have completed S-212 and if not red-carded for saw work or inexperienced must work under the supervision of a safe, experienced sawyer.</p> <p>Cut from the uphill side. Call out warnings when felling trees.</p> <p>Always inform those working below when potential exists for rolling material.</p> <p>Be aware of burned out snags and/or widow makers – use spotters to alert sawyer of dangers.</p> <p>Wear proper PPE, including chaps – both sawyer and swamper.</p> <p>Avoid contacting the tip of the bar with objects to prevent kickback.</p> <p>Use proper felling techniques, including using wedges where necessary.</p> |

| | |
|---|---|
| <p>Portable pump use: A properly working pump and proper operation of pump reduce the chance of injury!</p> <p>Potential injuries include:</p> <p>Burns from pump Explosion while refueling</p> <p>Drafting site hazards</p> <p>Back injuries</p> <p>Head / hand/ eye injuries</p> | <p>Keep pump clean and free of excess dirt. Obtain proper training before using pump. Make sure pump is primed before beginning to pump. Do not rest any body part on pump. Wear eye and ear protection. If pump is not working properly stop the pump and fix. Obtain help if needed. Warn personnel that pump is hot. Always give pump time to warm up before operating at peak performance. Allow two minute cool down before shutting off. Make sure pump is cool before refueling. Do not touch exhaust or other parts of the pump. Make sure fuel is not excessively old and properly mixed. Do not smoke near pump during refueling. Wipe up any spills. Fuel must be stored in properly marked container and replaced in compartment when done. Make sure water source is adequate. Make sure suction valve is at least a foot under water and use a shovel or bucket to keep obstructions away from the suction end. If water is deep, do not work in the water. Use a shovel to extend the suction hose into the water. Set up drafting site in least hazardous area feasible. Use proper lifting techniques when moving pump. Ask for assistance if needed. Always wear PPE, especially eye and ear protection. Wear an ear speaker or stand a distance away from the pump to remain in radio communication with other burn personnel. Always wear eye protection when applying water. Monitor the pressure and keep pressure safe, if pressure is too high and difficult to hold onto let go and run out of the way. Always make sure hose is secure and tight and make sure pressure is not so high that hose is at risk of blowing. Always wear hard hats and gloves while handling hoses. When pulling hose, use proper techniques and only lift as much you can handle. Use proper rolling techniques, always lift with bent knees using your legs not your back. If hurt notify your supervisor. Never drink stream, lake or pond water.</p> |
| <p>Emergency Evacuation Procedure: Illness/Injury on site</p> | <p>On site NPS personnel will be designated as medical responders and shall have first aid equipment to initiate treatment. Notify Visitor Center personnel to request medical response from responsible medical first responders. Provide type of injury, location, access and number of patients. Identify EMT's and available medical equipment on project during briefing / tailgate safety session. Notify supervisor of injury. Complete necessary paperwork.</p> |

| | |
|-------------------------------|--|
| Public On project site | Keep alert and be polite. Post signs at Visitor Center to warn public of potential smoke and fire hazards. If non-fire personnel arrive on scene of project, notify the burn boss and escort to a safe location. If resistance is encountered, Superintendent should be notified. Document all steps and contacts. |
|-------------------------------|--|

| | | |
|--------------|--------|-------|
| Approved by: | Title: | Date: |
|--------------|--------|-------|

10 STANDARD FIRE ORDERS

The NWCG Parent Group just approved the revision of the Ten Standard Fire Orders in accordance with their original arrangement. The original arrangement of the Orders are logically organized to be implemented systematically and applied to all fire situations.

Fire Behavior

1. Keep informed on fire weather conditions and forecasts.
2. Know what your fire is doing at all times.
3. Base all actions on current and expected behavior of the fire.

Fireline Safety

4. Identify escape routes and make them known.
5. Post lookouts when there is possible danger.
6. Be alert. Keep calm. Think clearly. Act decisively.

Organizational Control

7. Maintain prompt communications with your forces, your supervisor and adjoining forces.
8. Give clear instructions and insure they are understood.
9. Maintain control of your forces at all times.

If 1-9 are considered, then...

10. Fight fire aggressively, having provided for safety first.

The 10 Standard Fire Orders are firm. We Don't Break Them; We Don't Bend Them. All firefighters have a Right to a Safe Assignment.

18 WATCH OUT SITUATIONS

1. Fire not scouted and sized up.
2. In country not seen in daylight.
3. Safety zones and escape routes not identified.
4. Unfamiliar with weather and local factors influencing fire behavior
5. Uninformed on strategy, tactics, and hazards.
6. Instructions and assignments not clear.
7. No communication link between crewmembers and supervisors.
8. Constructing line without safe anchor point.
9. Building line downhill with fire below.
10. Attempting frontal assault on fire.
11. Unburned fuel between you and the fire.
12. Cannot see main fire, not in contact with anyone who can.
13. On a hillside where rolling material can ignite fuel below.
14. Weather gets hotter and drier.
15. Wind increases and/or changes direction.
16. Getting frequent spot fires across line.
17. Terrain or fuels make escape to safety zones difficult.
18. Feel like taking a nap near fireline.

APPENDIX 14
NOTIFICATION LIST

WHITMAN MISSION NHS FIRE NOTIFICATION LIST

Please provide the following information:

- **A prescribed fire is being conducted in Whitman Mission NHS by fire managers to achieve specific resource management and hazard fuel reduction objectives**
 - **Date and time burn will occur**
 - **Location of burn within the park**
 - **Planned acreage for day**

IN PARK

Superintendent's Office – 522-6356

Visitor Center – 522-6357

Chief of Maintenance – 522-6359

Maintenance Shop – 522-6363

OUT OF PARK

| Position/Role | Organization/Name | Phone # |
|------------------------------|---|----------------------------|
| Wildland Fire Notification | Walla Walla County Fire District #4 | 9-911 or 529-1282 |
| | Walla Walla Ranger District | 522-6281 |
| Structural Fire Notification | Walla Walla County Fire District #4 | 9-911 or 529-1282 |
| National Weather Service | Pendleton Office | 541-276-7832 |
| Air Quality/Burn Day | Washington Dept. of Ecology County Burn Safety Authority | 1-800-406-5322 527-3226 |
| Electric Company | Pacific Power | 1-888-221-7070 |
| Park Neighbors | Mark and Donna Hannebut | 525-4097 |
| | Mike and Laurie Klicker | 529-9353 |
| | Neil and Flora Shelden | 525-5409 |
| | Ken and Micki Maxson | 529-5414 or 526-3244 |
| Neighboring Businesses | 3 Rivers Winery | 526-9463 |

Updated: 01/2004

POST-PROJECT EVALUATION

Instructions for Completion of Post-Project Evaluation Form

This form is to be completed and submitted for review within 30 days of declaring the project complete.

Block 1 Self-explanatory

Block 2 Copy of the Project Objectives as listed in the Project Plan.

Block 3 Give quantitative results of how well objectives were met, i.e. % of 1 hour and 10 hour fuels removed, % of burn area with fuels reduced, % of area with acceptable/unacceptable scorch, etc.

Block 4 Give a short narrative of problems encountered and suggestions for improving or refining operations and prescriptions i.e. firing pattern, equipment limitations, drought index, effectiveness of barriers.

Block 5 Self-explanatory - for providing feedback to the Program

Block 1)

Individual Leading Evaluation: _____

Whitman Mission NHS Prescribed Fire Name: _____

Acres Treated: _____

Total Cost: \$ _____

Cost/Acre: \$ _____

(Block 2)

Objectives:

| Specific Objectives | Actual Results |
|--|----------------|
| Reduce dead grass vegetation by 80% over 60-80% of the area. | |
| Retain 75% of the shrub cover in the burn unit. | |
| Retain 95% of standing trees within the burn unit. | |

Range of Acceptable Results Expected Across the Project Area

It is expected that 80-90% of the burned area will be blackened by fire. The burned area will exhibit a variety of fire effects. The effects will range from small patches of total mortality of bunch grasses to low severity surface fires that consume only a thin layer of the dead grass stems.

(Block 3)

Results:

(Block 4)

Problems Encountered, Methods to Improve Next Operation:

Review & Signature:

Burn Boss: _____

Comments:

Chief, Interpretation & Resource Management: _____

Comments:

PRESCRIBED FIRE PLAN - TECHNICAL REVIEW

Park: Whitman Mission National Historic Site

Project Name: **Whitman Mission NHS Prescribed Fire**

| Prescribed Fire Plan Elements | Status | Date | Initial |
|--|--------|----------|---------|
| Signature Page | + | 02/11/04 | CC |
| Executive Summary | + | 2/11/04 | CC |
| Description of Prescribed Fire Area | + | 02/11/04 | CC |
| Goals and Objectives | + | 02/11/04 | CC |
| Project Complexity/Risk | + | 02/11/04 | CC |
| Organization UPDATED 02/17/2004 RLT | 0 | 02/11/04 | CC |
| Cost | + | 02/11/04 | CC |
| Scheduling | + | 02/11/04 | CC |
| Preburn Considerations | + | 02/11/04 | CC |
| Prescription | + | 02/11/04 | CC |
| Ignition & Holding Actions | + | 02/11/04 | CC |
| Wildland Fire Transition Plan | + | 02/11/04 | CC |
| Protection of Sensitive Features | + | 02/11/04 | CC |
| Public and Firefighter Safety | + | 02/11/04 | CC |
| Smoke Management | + | 02/11/04 | CC |
| Interagency Coordination and Public Information | + | 02/11/04 | CC |
| Monitoring | + | 02/11/04 | CC |
| Post Fire Rehabilitation | + | 02/11/04 | CC |
| Post Fire Reports UPDATED 02/17/2004 RLT | 0 | 02/11/04 | CC |
| Appendices | + | 02/11/04 | CC |

Status Coding:

- + Adequate – Meets NPS Standards
- 0 Adequate with modification. See comments.
- Deficient. See comments.
- NC Unable to evaluate.

Comments: Overall a very good and thorough job with the burn plan! Through out the plan you use NFFL (Northern Forest Fire Lab) when you are actually talking about the NFDRS (National Fire Danger Rating System) fuel models (those represented by letters). The NFFL models are the same as the Fire Behavior Prediction System Standard Fuel Models. The element on Organization where you state that a person may hold more than 1 position at the same time, I would strongly discourage this! This is one of the big issues that came out of the Fire Fighter fatalities on the 30-mile incident. Your cooperators from the USFS are not allowed to do this, and probably will not participate in your burn under this scenario as it violates the 30-mile abatement plan. Under "Post Fire Reports," you need to state that you will update the National Fire Plan Operational Reporting System accomplishments within the same time frame as you complete the DI-1202.


Signature: Corky Conover Date: 02/11/04Title: NPS-PWR Fuels Specialist Office: 559-565-3129